Question Bank

Program: CH
Semester: Sixth
Name of course: Mass Transfer Operations
Course code: 22609

Unit Test 1

Chapter 1 Distillation (28 marks)

2 marks question

1. Define diffusion and state types of diffusion.
2. Give the flux equation for steady state equimolar counter diffusion.
3. Define volatility and relative volatility.
4. Draw neat sketch of bubble cap tray.
5. Define Raoult's law.
6. Give Rayleigh's equation and explain the terms.

4 marks question

7. Explain Fick's law of diffusion, give mathematical expression and explain the terms.
8. Explain steam distillation.
9. Explain optimum reflux ratio.
10. Give values of q for different feed conditions and draw q line for different values of q.
11. A liquid mixture containing 40 mol% benzene and 60 mol% toluene is subjected to flash distillation at a pressure of 101.325 kPa to vaporize 50 mol% of feed. What will be equilibrium composition of vapour and liquid ?

x	0	0.05	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
y	0	0.13	0.21	0.375	0.5	0.6	0.7	0.77	0.83	0.9	0.95	1

12. Explain steps involved in McCabe –Thiele method for finding out number of theoretical plates.
13. Explain azeotropic distillation.
14. Generate x-y data for α=2.1 and draw x-y diagram.
15. Draw neat labeled diagram for continuous rectification in fractionating column.

Chapter 2 Gas Absorption (08 marks)

2 marks question

16. Give types of gas absorption with examples.
17. Define 1) flooding point 2) channeling in packed column.
18. Give classification of packings with examples.
19. Give essential characteristics of tower packings.

20. Explain HETP in packed tower

4 marks question

21. Compare gas absorption and distillation as separation operation.
22. Explain selection criteria for solvent in gas absorption.
23. Explain hydrodynamics in packed column.
24. Explain construction of mechanically agitated vessel with diagram.
25. Compare plate column and packed column.